



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,315	08/22/2005	Poopathy Kathirgamanathan	LUC-012	8381
7590 08/04/2009				
David Silverstein Andover IP Law Suite 300 44 Park Street, Andover, MA 01810			EXAMINER YAMNITZKY, MARIE ROSE	
			ART UNIT 1794	PAPER NUMBER
			MAIL DATE 08/04/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,315

Applicant(s)

KATHIRGAMANATHAN ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50 and 52-56 is/are rejected.
- 7) ☒ Claim(s) 51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 02, 2009 has been partially entered (the amendment to the specification as filed March 02, 2009 has not been entered), and applicant's submission filed on May 12, 2009 has been entered.

2. The specification has been amended, claim 50 has been amended, and claims 55 and 56 have been added.

Claims 50-56 are pending.

3. The terminal disclaimer filed on March 02, 2009, disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Patent No. 7,211,334, has been reviewed and is accepted. The terminal disclaimer has been recorded.

4. The objection to the specification as set forth in the Office action mailed November 03, 2008 is overcome by amendment. However, other informalities in the disclosure which were not noted by the prior examiner are set forth below.

5. The disclosure is objected to because of the following informalities:

There is no brief description of the drawings.

Example 8 apparently misidentifies a reactant in indicating that the calcium complex of Example 6 was heated under reflux with “phenanthrene”. Phenanthrene is an aromatic hydrocarbon compound having three fused benzene rings. Phenanthroline, in contrast, is a heteroaromatic compound having two pyridine rings fused to a benzene ring. The formula for $\text{Ca}(\text{pyr})_2\text{Phen}_2$, which is identified as the product obtained after reflux per Example 8, has two phenanthroline ligands (specifically, two 1,10-phenanthroline ligands). Given the disclosure beginning at page 2, line 18, 1,10-phenanthroline is expected to be the reactant used per Example 8 rather than phenanthrene.

Appropriate correction is required.

6. Claims 50 and 52-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 50, 52, 55 and 56 recite “diphenanthryl calcium bis-(4-*t*-butylacetyl-3-methyl-1-phenyl-pyrazol-5-olate)[$\text{Ca}(\text{pyr})_2\text{Phen}_2$]”. Presuming that the abbreviation “ $\text{Ca}(\text{pyr})_2\text{Phen}_2$ ” is intended to mean the same compound as the name “diphenanthryl calcium bis-(4-*t*-butylacetyl-3-methyl-1-phenyl-pyrazol-5-olate)”, the name is inconsistent with the structure shown for $\text{Ca}(\text{pyr})_2\text{Phen}_2$ as set forth in Example 8. The formula for $\text{Ca}(\text{pyr})_2\text{Phen}_2$ does not show a diphenanthryl ligand or two phenanthryl ligands; instead, the formula shows two 1,10-

phenanthroline ligands. To be consistent with the formula for $\text{Ca}(\text{pyr})_2\text{Phen}_2$, the examiner suggests changing “diphenanthryl” to --bis(1,10-phenanthroline)--.

Claims 53 and 56 require a hole transport layer of “ α -NPB”. The abbreviation “ α -NPB” is not used and/or defined elsewhere in the disclosure. (However, pages 23-24 describe devices having a layer of “ α -NPB” and the formula for “ α -NPB” is shown in Fig. 1.)

7. Claims 50 and 52-54 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. (Amendment of claims 50 and 52 is required to correct the name for the calcium complex, and amendment of claim 53 is required to correct the abbreviation.)

Claim 51 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. (Claim 51 would also be allowable as is if claim 50 is amended to overcome the rejection under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.)

Claim 56 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. Claim 55 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 52. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim

to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). As noted above, claim 52 will be allowable upon correction of the issues raised under 35 U.S.C. 112, 2nd paragraph, with respect to claims 50 and 52.

9. The rejection of claims 50, 51 and 54 under 35 U.S.C. 103(a) as unpatentable over Kathirgamanathan in view of Gao et al. has been reconsidered and is withdrawn, as is the corresponding rejection of claim 53 further in view of Qiu et al. While the Kathirgamanathan and Gao references disclose terbium complexes, neither reference discloses the combination of ligands required by present Tb(pyr)₃OPNP, and neither reference discloses the specific ligand structure of the present “pyr” ligands. As demonstrated by the data in Table 2 of the Gao reference, very small changes in the ligand structure of ligands similar to “pyr” can have a relatively large effect on luminescent properties of complexes made with the ligands, with no specific trend shown between the size/shape of the alkyl group at “R” for Gao’s central ligands having an alkyl group at “R” and the luminescent properties.

10. Although the obviousness-type double patenting rejection over Patent No. 7,211,334 in view of Marchetti et al. is overcome by the terminal disclaimer filed March 02, 2009, the present examiner also formally withdraws the rejection, and withdraws the related rejection which was made under 35 U.S.C. 103(a).

The ‘334 patent encompasses an electroluminescent device comprising an electroluminescent material which is a calcium complex having the two “pyr” ligands of present

$\text{Ca}(\text{pyr})_2\text{Phen}_2$. However, the patent claims are silent with respect to the two “phen” ligands of present $\text{Ca}(\text{pyr})_2\text{Phen}_2$, and the patent disclosure as a whole does not teach complexes having a combination of “pyr” ligands and neutral ligands that are the same as, or similar to, the presently required “phen” ligands. Although the Marchetti reference discloses $\text{Ca}(\text{pyr})_2\text{Phen}_2$, this reference makes no mentions of any light-emissive capabilities of the complex that might suggest to one of ordinary skill in the art that $\text{Ca}(\text{pyr})_2\text{Phen}_2$ could be used in place of $\text{Ca}(\text{pyr})_2$ in a device as disclosed and claimed in the ‘334 patent. There is insufficient motivation to combine the teachings of the ‘334 patent and the Marchetti et al. reference to arrive at the presently claimed device.

In applicant’s responses filed March 02, 2009 and May 12, 2009, applicant argued that the rejection under 35 U.S.C. 103(a) based on the ‘334 patent in view of Marchetti et al. was overcome by the terminal disclaimer and accompanying assignment document filed March 02, 2009 establishing common ownership. In order to overcome a rejection under 35 U.S.C. 103(a) via 102(e), common ownership of the application and the reference “at the time the invention was made” must be established (see MPEP 706.02(1)(2) II). The terminal disclaimer and assignment document only establish that the application and the reference are presently commonly owned. The examiner also notes that if there were proper motivation to combine the references, then a similar rejection could also have been made using the PCT publication (WO 03/006573) related to the ‘334 patent, which is available under 103(a) via 102(a) and 102(e) since the present claims are not supported by applicant’s GB foreign priority application filed December 05, 2002. However, since the rejection is withdrawn, the issue is moot.

Art Unit: 1794

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday and Wednesday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

/Marie R. Yamnitzky/
Primary Examiner, Art Unit 1794

MRY
August 02, 2009